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ARCTIC GOLD & SILVER MINES
COMPILATION AND EVALUATION REPORT

THE OLD NICK PROPERTY
BRIDESVILLE, B.C.

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ARCTIC GOLD & SILVER MINES LTD.

COMPILATION AND EVALUATION REPORT

ON

THE OLD NICK PROPERTY

BRIDESVILLE, BRITISH COLUMBIA

by

John S. Vincent, M.Sc., F.G.A.C.,
Vancouver, British Columbia.

FEBRUARY 27th, 1970.

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INTRODUCTION

During 1967 and 1968, Newmont Mining Corporation of Canada Ltd. completed an exploration program on the Old Nick property which consisted of geologic mapping, geochemical stream sediment and soil surveys, airborne and ground magnetometer surveys, bulldozer trenching and rock sampling. Nickeliferous zones, grading 0.15% to 0.25% nickel, were found in a pyrometasomatic quartzite band 2,600 feet long and approximately 400 feet wide, and in associated peridotitic-dunitic intrusive bodies. Microscopic studies have shown the nickel mineral to be pentlandite intimately intergrown with pyrite and pyrrhotite. This fine intergrowth would necessitate complex metallurgical processes, and recovery would be poor. At that time, Newmont reached the conclusion that:

> "Under the present economic conditions, further exploitation of the nickeliferous mineralization occurring in the Bridesville area is not feasible."

Since that time, Mr. Egil Livgard, of Arctic Gold & Silver Mines Ltd., has investigated and studied the application of bacterial leaching and the possibility of using these techniques on the Old Nick nickel mineralization. Samples of the material have undergone extensive tests at the British Columbia Research Council and, more recently, at Seymour Laboratories Ltd., Vancouver. To date, results have been most encouraging and additional material has been requested for further study and testing.

Bacterial leaching techniques introduce a new set of economic conditions which must be considered. In view of the favourable test results to date, it is the purpose of this report to correlate and evaluate the work to date and outline a program of evaluation and exploration to define and outline economic zones and quantities of mineralization.

Information for this report has been obtained from a study of reports written to date, and a list of references is included. Because of snow cover at the present time, the writer has not visited the property. However, as weather permits, several days will be required to examine bedrock exposures.

For completeness, an outline of the Newmont work is presented. However, the reader is referred to their report for more details.

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SUMMARY AND CONCLUSIONS

Recent exploration work has indicated nickel mineralization, grading 0.20% to 0.25% nickel, in an altered quartzite band approximately 2,600 feet long and 400 feet wide. Sufficient detail ~~in leaching~~ is lacking to enable correlation and evaluation between the altered and mineralized zones. It is the writer's opinion that the immediate area of interest is structurally complex, and an understanding of the relationships between alteration and mineralization, stratigraphy and structure, and the ultra-basic intrusives, will be imperative for a proper evaluation of the property.

The economic feasibility of recovering the nickel is contingent on the successful application of the bacterial leaching techniques now under study. In view of the new set of economic conditions introduced by these studies, it is concluded that further work is warranted to evaluate and outline the zones of mineralization.

PROPERTY

Newmont carried out their work under an option agreement with Copper Ridge Mines Ltd. and Nickel Ridge Mines Ltd. on a block of 274 claims.

Following their conclusions and recommendations, most of the claims were allowed to expire in 1968, and the option agreements were terminated. In June, 1969, Arctic Gold & Silver Mines Ltd. optioned the property from Mr. Brian Fenwick Wilson.

The following list of 46 claims make up the property:

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Name of Claim	Record Number	Date of Expiry
Old Nick #1-4	22890-22893	March 23, 1970
" " #5-6	23054-23055	May 2, 1970
" " #8	23057	May 2, 1970
" " #13	23062	May 2, 1970
" " #17	23066	May 2, 1970
" " #19-20	23068-23069	May 2, 1970
" " #60	23074	May 2, 1970
" " #61-67	23075-23081	May 2, 1973
Old Nick #E-#G	23094-23096	May 2, 1970
" " #21-24	23224-23227	May 5, 1972
Old Nick #A-#D	23228-23231	May 5, 1972
" " #127-129	23276-23278	May 5, 1972
" " #77	23008	May 10, 1973
" " #79-87	23310-23318	May 2 or 10, 1973
Don #10 Fraction	26122	Aug. 24, 1972
Jake #3	23084	May 2, 1972
" #5	23086	May 2, 1972
" #7	23088	May 2, 1972

contd....

LOCATION AND ACCESS

The property is located in south-central British Columbia on the Southern Transprovincial Highway, 23 miles east of Osoyoos. Numerous logging roads provide ready access to most points on the property, and the abandoned Great Northern Railway grade provides access from Rock Creek and Bridesville. At present, access to the property is via a private farm road from the highway.

GEOLOGY

General

An excellent presentation of regional and local geology is given in the Newmont report (1, pp. 9-11) and the reader is referred to it for further details.

In general, the mineralization of interest is localized in a quartzite horizon within the Anarchist Group. The Anarchist Group comprises a late Paleozoic sequence of greenstones, quartzite, greywacke, and limestone. Work to date shows these rocks to be complexly ~~completely~~ folded and faulted within the immediate area of interest. Cretaceous intrusive rocks consisting of an early ultrabasic phase and increasingly acidic early phases are prominent in the area, and they are regarded as genetically significant with regard to mineralization. Mineralization of note in the area has been found within Cretaceous intrusives, or in the Pre-Cretaceous host rocks.

Mineralization

Work to date has shown the nickel mineralization to consist of a microscopic intergrowth of pentlandite, pyrrhotite and pyrite in a fine network of fractures within a particular altered quartzite horizon. The altered quartzite phases most favourable for mineralization are characteristically green, and the Newmont report attributes the green colouration to the development of sericite and chlorite in the veinlets containing the sulphides. These veinlets are intimately associated with minute

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injections of basic material which are regarded as genetically related to the nearby ultrabasic intrusives. It is interesting to note that a study of the mineralization by G.E.P. Eastwood of the Department of Mines (4, p.226) generally supports the findings of the Newmont study. His thin section work on the "typical altered rock" showed tremolite to be a major constituent, and the green mica to be largely a chromiam phengyte.

The association of the nickel mineralization with the green phase of the altered quartzite has been established, but more detailed study is required to determine the distribution and significance of these zones relative to the stratigraphy, structure and ultrabasic intrusives. This study will be hindered by the lack of outcrop in the area, and a carefully planned drilling program will be required to provide most of this information.

SUMMARY AND SIGNIFICANCE OF RECENT WORK

Geophysical

Newmont carried out airborne and ground magnetometer surveys over the property but did not find any particular differences in magnetic susceptibility over the altered or mineralized zones in the quartzite horizons. However, one interesting aspect of the results is their interpretation of intrusive activity. A strong anomaly south of the property is regarded as indicating a large intrusive mass in which significant differentiation has taken place. The norhtwest boundary coincides with a portion of the Old Nick showings. They infer depths in the order of "a few hundred feet". The writer regards this feature as interesting in regard to any genetic consideration for the nickel mineralization.

In general, although the magnetic data does not appear to indicate zones of mineralization, valuable structural information may become evident as more geological details are obtained. At present, northeast-trending faults and fractures are evident, and folding is indicated.

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Geochemical

Newmont carried out an extensive geochemical program in the form of stream sediment and soil sampling for nickel, copper and zinc. The stream sediment survey outlined three significant areas characterized by values in excess of 40 parts per million nickel. Of these areas, the Old Nick property was prominent with values ranging from 20 parts per million to 278 parts per million nickel. The previously known occurrences were all indicated by the results, and the detailed soil survey defined their extent.

The soil survey over the Old Nick Grid showed an upper limit of 65 parts per million nickel as background. The nickel anomalies are clearly defined and generally coincide with the mapped zones of altered and mineralized quartzite, as well as with areas underlain by ultrabasic rocks. The trend of the anomalies coincides with the broad structural features on the property. (Figure I) Local irregularities in the nickel pattern are attributed to topography and the variation in thickness of transported overburden.

The writer feels that the geochemical results indicate reasonable correlation between the nickel content of the soil and underlying nickel mineralization. It is interesting to note that most of the drilling was carried out prior to the Newmont program, and most of the anomalous area has not been tested (Figure 2).

Mapping

The property was mapped on a scale of 1 inch to 200 feet. Shallow overburden obscures most of the bedrock surface, and identification and correlation of the stratigraphic sequences is difficult. Thin section study of the various zones has provided valuable information as to the nature of alteration and mineralization (1, pp.15-16).

The structural features are complex with the bedding being tightly folded and faulted. There is a general east-northeast trend with moderate dip to the south, and this pattern is complicated by a set of strong, steeply dipping westerly to northwesterly faults. A weaker set of northeasterly trending faults were observed. Newmont

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concluded that the ultrabasic intrusives are structurally controlled by the stronger westerly fault zones.

Further geological work is essential to study the distribution and control of the altered and mineralized zones. Work to date has shown certain quartzite horizons to be favourable for alteration and mineralization, and it is imperative that their structural configuration be determined as closely as possible. The association of the ultrabasic bodies is important genetically, and their relationship to alteration and mineralization, structure and stratigraphy must be determined.

Trenching and Sampling

From the bulldozer trenching and sampling, Newmont concluded that the nickel mineralization was stratigraphically controlled by pyrometasomatic quartzite bands. They also note that: "nickel grade is not a function of total sulphides in the quartzite."

Their assay results indicate the nickel grades to range between 0.15% to 0.25% nickel, and these values to be fairly uniform over a strike length of approximately 1,400 feet.

Drilling

To date, drilling on the property has been concentrated in the area of 12E - 16E, with a few scattered holes to the east and west (Figure 2). Nine diamond drill holes for a total footage of 2,216 feet, and 26 percussion holes for 3,325 feet have been drilled. The results confirmed the surface sampling and generally indicated that subsurface grades are a little better than that found in the trenches.

The following paragraphs are taken directly from the Newmont report, pp. 22-24:

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"DDH's 1 - 3 intersected grades of 0.15 to 0.26% nickel in quartzite and 0.10 to 0.33% nickel in basic intrusive rock. Assayed sections of peridotite dyke rock in Hole 4 grade 0.15 to 0.22% nickel."

"Relatively deep diamond drill holes (DDHN 1 - DDHN 5) were drilled by Copper Ridge Mines in 1967. Holes DDHN 1 and DDHN 2 intersected nickeliferous quartzite and give a good picture of mineralization at depth. Hole DDHN 1, collared in nickeliferous quartzite, indicates a minimum apparent width of 420 feet of mineralized quartzite, grading 0.195% nickel. Typically, grades range from 0.07% nickel to 0.26% nickel. One 10 foot section returned an anomalous 0.52% nickel. Hole DDHN 2 intersected an apparent width of 272 feet of nickeliferous quartzite with grades ranging form 0.05% nickel to 0.25% nickel. Holes DDHN 3, DDHN 4, and DDHN 5 failed to intersect significant mineralization, hole DDHN 3 being lost before reaching its projected target."

"A number of percussion drill holes, 40 feet to 200 feet in length, were drilled by Copper Ridge Mines with an Atlas Copco O.D. drill (Figs. 3 and 4). Holes P 2, P 3, P 5 to P 10, P 12, and P 16 intersected significant nickel mineralization in quartzites and holes P 19 to P 23 intersected nickel bearing peridotite dykes. Assay results are summarized below:"

"Hole Number	Nickel Grades
P 2	0.18% Ni/22' - 140'
P 3	0.175% Ni/5' - 157'
P 5	0.082% Ni/3' - 103'
P 6	0.196% Ni/12' - 145'
P 7	0.25% Ni/5' - 40'
P 8	0.32% Ni/17' - 60'
P 9	0.245% Ni/7' - 60'
P 10	0.164% Ni/15' - 100'
P 12	0.171% Ni/12' - 125'
P 16 (Flat Hole - Fig. 4)	0.152% Ni/32' - 137'
P 19	0.085% Ni/120' - 200'
P 20	0.22% Ni/10' - 80'
P 21	0.19% Ni/30' - 70'
P 22	0.214% Ni/2' - 95'
P 23	0.205% Ni/110' - 130'

contd....

"Correlation between assay results from diamond drilling and percussion drilling is good with no vast discrepancies apparent."

All the holes were drilled at -90° to an average depth of approximately 150 feet. One percussion hole, P 16, was drilled at a low angle to the south (Figure 3). Considering the indicated dip of 35°-40° south, the vertical bore holes would intersect the bedding at an angle of approximately 50°. The drilling has not provided sufficient information to study a cross section of the stratigraphic sequence, or correlate mineralized zones. However, grade information has been substantiated and further drilling is justified.

Figure 3 illustrates the drilling on Section 1,200 E, which the writer regards as the most informative.

ECONOMIC CONSIDERATIONS

The results of surface and subsurface sampling to date indicate that grades of 0.20% to 0.25% nickel can be expected. Values up to 0.33% nickel were found in some associated basic intrusives, and it is possible that further study will define higher grade zones. Considering the nature of the mineralization, considerable detailed study will be required to establish definite grade figures and tonnage. Work to date indicates that the altered quartzite horizon of interest is approximately 2,600 feet long and 400 feet wide. The distribution of mineralized zones within the band have yet to be established, and it is the writer's opinion that this can be done most effectively by diamond drilling. Additional bulldozer trenching would be useful to investigate other areas outlined by the geochemical anomalies.

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The economic feasibility of recovering the nickel in the altered quartzite and associated ultrabasic intrusives is contingent on the successful application of the bacterial leaching processes now under study. The results to date have been encouraging and additional material has been requested by the British Columbia Research Council and Seymour Laboratories Ltd. (1) The leaching of a concentrate is being studied, as well as in-situ leaching. If results on the latter are successful, mill construction and processing costs would be eliminated and the overall operation greatly simplified.

RECOMMENDATIONS AND CONCLUSIONS

In view ofthe new set of economic conditions introduced by studies on the applicability of bacterial leaching to the nickel mineralization on the Old Nick property, it is concluded that additional work is warranted to evaluate and outline the zones of mineralization and establish any stratigraphic or structural controls which may exist. Unfortunately, the lack of bedrock exposure in the area will necessitate considerable additional bulldozer trenching and diamond drilling.

Trenching

Most of the trenching to date has been done on the east half of the mineralized zone. Several additional trenches would be useful towards the west end and around the suspected "nose" on line 4 W. Six trenches are located which would provide geological information, as well as investigate the geochemical anomalies. It is recommended that this trenching be done under the supervision of a geologist in conjunction with the mapping program. The locations of these additional trenches are proposed on Figure 2, but their final location will be contingent on field evidence and requirements as the program progresses. These spots are tentatively suggested, but should not be regarded as final.

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(1) Sections of diamond drill core will provide representative samples of subsurface material for this purpose.

Drilling

A two-phase diamond drilling program is recommended, as follows:

Phase I	:	Exploration
Phase II	:	Development

The initial drilling assigned to Phase I is illustrated on Figure 1 and presented in tabular form, as follows:

Section	Station	Map No.	Dip/Strike	Depth	Contingent
20E	0+00	5	-45° N.	-	500 feet
16E	2+50 S.	3	-45° N.	600 feet	
	2+00 N.	4	-45° N.	500 "	
12E	4+00 S.	1	-45° N.	600 "	
	0+00	2	-45° N.	600 "	
	8+50 N.	9	-45° N.	600 "	
8E	5+80 S.	6	-45° N.	600 "	
	1+50 S.	7	-45° N.	500 "	
	3+00 N.	8	-45° N.	700 "	
4E	2+50 S.	11	-45° N.	600 "	
	1+80 N.	10	-45° N.	-	500 "
	8+00 S.	12	-45° N.	600 "	
0	5+00 S.	14	-45° N.	500 "	
	0+00	15	-45° N.	-	600 "
	9+00 S.	13	-45° N.	-	500 "
4W	10+00 S.	17	-45° N.	-	600 "
	6+00 S.	16	-45° N.	-	600 "
8W	9+00 S.	18	-45° N.	-	400 "
	5+00 S.	19	-45° N.	-	400 "
				6,400 feet	4,100 feet

TOTAL 10,500 feet.

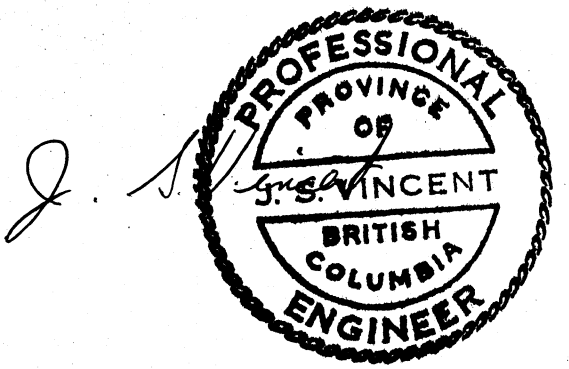
contd....

The holes are numbered on the map in the order they should be drilled. Close supervision and evaluation of the results will be important to ensure the most effective drilling for the dollars spent, as bore holes which are listed as contingent depend on the results of previous holes. The holes have been planned to provide sectional information across the mineralized quartzite horizon and enable correlation of mineralized zones between holes and between sections. A strike length of 3,000 feet will be evaluated to a depth of approximately 400 feet. The drilling will assess the quartzite horizon, as well as the untested portions overlain by the geochemical anomaly. As in the case of the trenching, bore hole location is subject to change as field evidence indicates. If drilling west of Section 4+00E indicates the nose of a fold, the bore hole location, strike and dip should be changed accordingly. The success of this phase of the program is dependent on competent and effective supervision.

The second phase of the drilling program is contingent on the results of Phase I, and will be planned following an evaluation of the Phase I results.

Cost Estimate

Bulldozer Trenching:	
Approximately 2,000 linear feet of trenching with a D7 tractor - 50 hrs. @ $30/hr.	$ 1,500.00
Drilling:	
10,500 ft. of BQWL drilling @ $12.00/ft. (all inclusive)	126,000.00
Supervision:	
Consulting services $1,000/month x 2 months	2,000.00
Core grabber and general assistant	1,000.00
Assays - estimate 1,000 @ $5.00 each	5,000.00
Contingencies:	5,000.00
	$140,500.00



CERTIFICATE

February 27th, 1970.

I, John S. Vincent, with business and residential addresses in Vancouver, British Columbia, do hereby certify that:

1. I am a consulting mining geologist.

2. I am a graduate of Queen's University, B.Sc., 1959, Geological Sciences, and of McGill University, M.Sc., 1962, Economic Geology.

3. I am a Fellow of the Geological Association of Canada, and I have applied for registration in the Association of Professional Engineers of the Province of British Columbia.

4. From 1962 until 1969, I was engaged as a mine exploration geologist with the International Nickel Co. of Canada Ltd. in Thompson, Manitoba.

5. I have not received, nor do I expect to receive any interest, directly or indirectly, in the properties or securities of Arctic Gold & Silver Mines, or of any associated company.

Respectfully submitted,

John S. Vincent, M.Sc., F.G.A.C.,
Vancouver, B.C.

REFERENCES

1. Newmont Mining Corporation Ltd, 1968, Geological, Geochemical and Geophysical Reports on Exploration of the Nickel Ridge Property, Bridesville, B.C.

2. Utica Mines Ltd., August, 1966, E. Livgard, Report on Old Nick Claim Group, Rock Creek, B.C.

3. Copper Ridge Mines Ltd., October, 1966, E. Livgard, Work Reports on Old Nick Option.

4. Minister of Mines and Petroleum Resources, B.C., Annual Report, 1968, pp. 225-226.

CERTIFICATE

I, John S. Vincent, of 4859 - 12A Avenue, Delta, in the Province of British Columbia, do hereby certify that:

1. I am a consulting geologist.

2. I am a graduate of Queen's University, B.Sc. 1959, Geological Sciences and of McGill University, M.Sc. 1962, Economic Geology.

3. I am a Fellow of the Geological Association of Canada, and a member of the Association of Professional Engineers, in the Province of British Columbia.

4. From 1962 until 1969 I was engaged as a mine exploration geologist with the International Nickel Company of Canada Ltd. in Thompson, Manitoba, and since 1969 I have practised my profession as a consulting mining geologist.

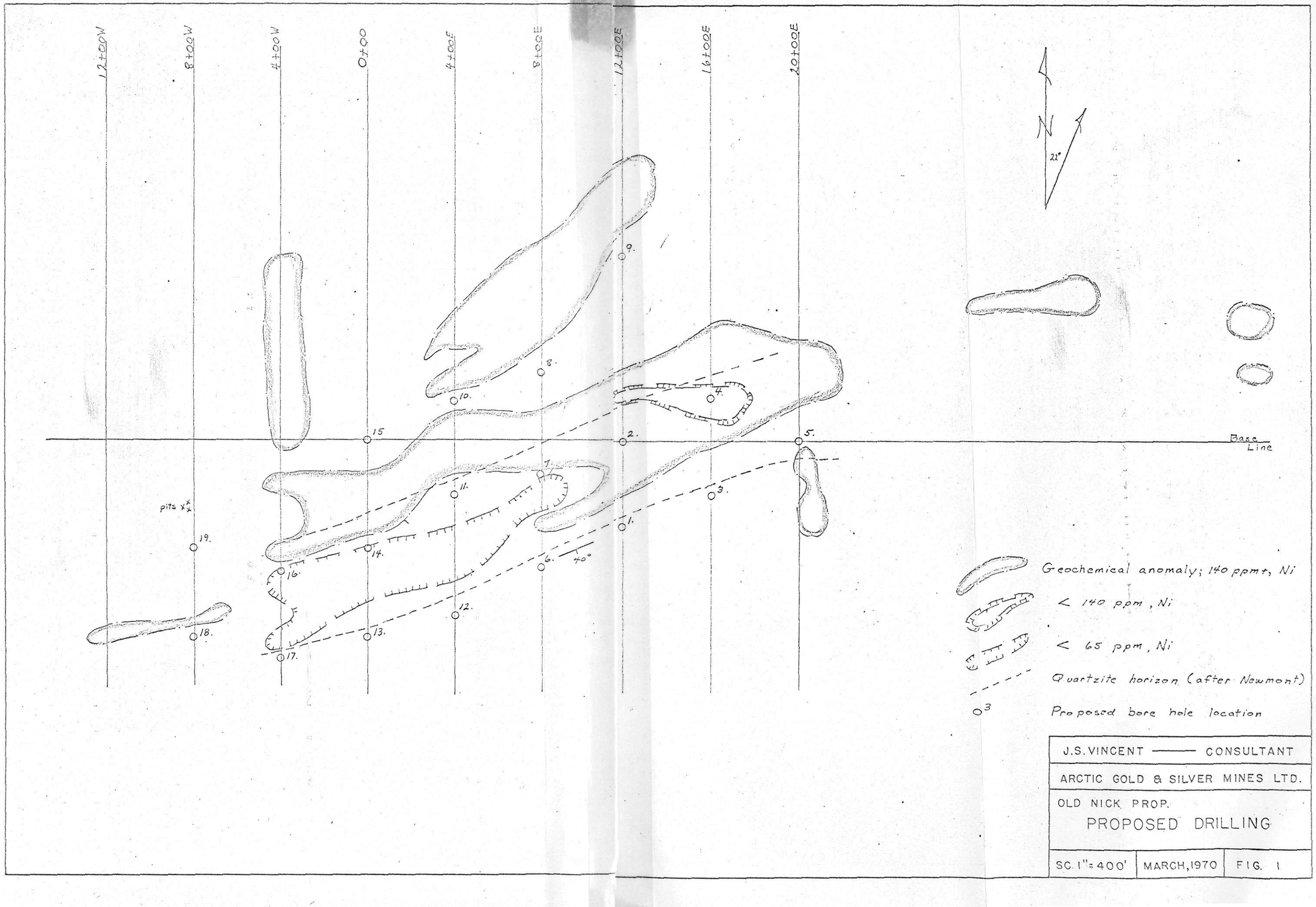
5. I have not directly or indirectly received nor do I expect to receive any interest, direct or indirect, in the property of Arctic Gold & Silver Mines Ltd. or of any affiliate company.

6. The following report relating to the Old Nick Property is based on information made available to me from geological reports and maps in the files of Arctic Gold & Silver Mines Ltd., and from Government publications.

Dated at Vancouver, B.C. this 30th day of October, 1970.

John S. Vincent, P.Eng.,
Consulting Geologist

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
J. S. VINCENT


12+00W
8+00W
4+00W
0+00
4+00E
8+00E
12+00E
16+00E
20+00E
N
22°
Base Line
pits
Geochemical anomaly; 140 ppm+, Ni
< 140 ppm, Ni
< 65 ppm, Ni
Quartzite horizon (after Newmont)
Proposed bore hole location
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PROPOSED DRILLING
SC. 1"=400'
MARCH, 1970
FIG. 1

4+00W
0+00
4+00E
8+00E
12+00E
16+00E
20+00E
B.L.
22°
A
B
C
D
E
F
G
H
J
K
L
N
BH2 -50°
-46°
BH1
-54°
BH3
BH4
DDH-1
DDH-3
P_1 P_2 P_3 P_4 P_5 P_6 P_7 P_8 P_9 P_{10} P_{11} P_{12} P_{14} P_{15} P_{16} P_{18} P_{20} P_{24}
N_2 N_3 N_4 N_5

Geochemical anomaly; 140 ppm +, Ni

Trench

Proposed trench

P_5 Percussion hole

N_4, BH_3, DDH-1, Diamond drill holes

J.S. VINCENT —— CONSULTANT

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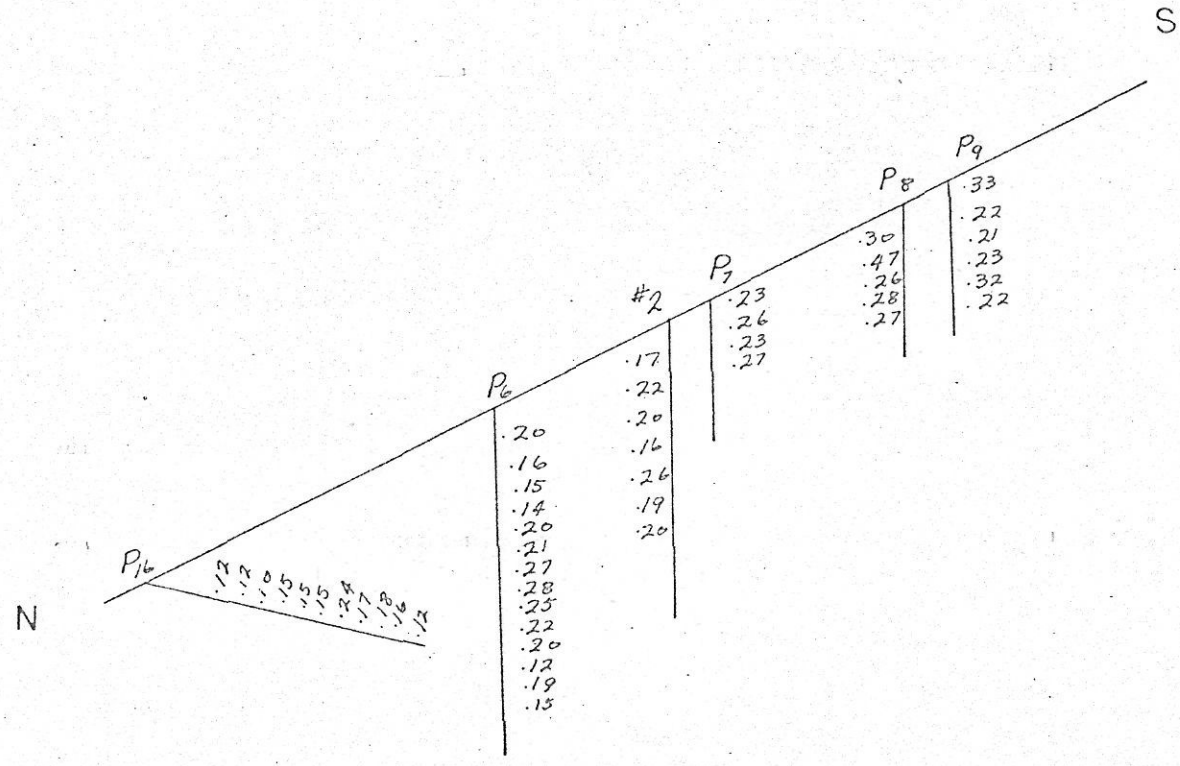
TRENCH & DRILL SITE LOCATIONS

SC. 1" = 200' | MARCH, 1970 | FIG. 2



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ARCTIC GOLD & SILVER MINES LTD.		
OLD NICK PROP. SECTION 1200 E		
SC. 1"= 100'	MARCH, 1970	FIG. 3